

*DESIDOC Journal of Library & Information Technology*, Vol. 30, No. 4, July 2010, pp. 53-57  
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## Design and Development of Online Directory: A Case Study of Aerospace Engineering Institutions and Teachers in India

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### ABSTRACT

Directory is the vital reference tool for finding information related to an organisation, institutions, companies, persons, etc. These sources are becoming more beaming and significant for the users when they are available in e-form and accessible online. The present study is an outcome of a major research project awarded and funded by the Aeronautics Research and Development Board (AR&DB), DRDO, to the Department of Library and Information Science, University of Delhi under the investigation of author. Data for the directory was collected through a specially designed 'Data Capturing Form' from all the teachers and teaching institutions of Aerospace Engineering in India. The collected data was scrupulously analysed, organised, validated and then used for the development of online directory. The directory is developed on a specially designed Content Management Software (CMS) based system for managing the content in dynamic environment.

**Keywords:** Aerodirindia, online directory, aerospace engineering institutions, India, DRDO.

### 1. INTRODUCTION

Directories are basically the list of institutions, companies, firms, etc., of the government, corporate and private organisations. Directories are used to find the information on various aspects of organisations such as name and address, programmes and activities, courses, faculty, lab and library facilities, etc. These sources play a very vital role in providing the various sorts of information on institutions and teachers to the students and researchers, scientists and technocrats, administrators, policy makers, and even to a general information seeker both in and outside the country. The Internet and web technologies have changed the way people communicate, interact, acquire, share knowledge, search, investigate and participate in the creation and re-use of the information. It is also an undisputed fact that Information and Communication Technologies has brought new dimensions and opportunities in the process of information access and acquisition, consolidation and communication, storeation and retrieval, downloading and distribution throughout the world. Through using the web technologies, one can easily design and develop such online information tools

to provide the reliable, up-to-date, authentic and comprehensive information on the various aspects of aerospace/aeronautical teaching and teachers in India.

The journey of the aerospace engineering education in India started from the premier educational institutions such as Indian Institute of Science (IISc) Bangalore, Indian Institute of Technology Kharagpur (IIT-Kgh), Indian Institute of Technology Kanpur (IIT-K), Indian Institute of Technology Mumbai (IIT-M), Indian Institute of Technology Madras (IIT-M), Madras Institute of Technology (MIT), Chennai, and Punjab Engineering College (PEC), Chandigarh (now known as PEC University of Technology).

During the last couple of years, there is an exponential growth of the Aerospace Engineering teaching institutions in the country. This study, revealed that more than 62 teaching departments/institutions are imparting quality education in Aeronautical Engineering at various levels such as BTech, MTech, MS (dual degree) and PhD in India. The majority of the courses in Aeronautical Engineering are run by the colleges which are affiliated to the state/private universities. The

surprising fact, find from the study, is that cities like Chennai and Coimbatore of the Tamilnadu state are the hub/focal destination of the aeronautical teaching in the Country followed by Bangalore and Hyderabad.

## 2. OBJECTIVES OF THE STUDY

The basic objective of the study is to design and develop an 'Online Directory of Aerospace Engineering Teaching Institutions and Teachers in India' based on a Content Management Software (CMS). In addition, the study has the following specific objectives:

- ✂ To design and develop a reliable, authentic, up-to-date, authoritative and comprehensive online directory of Aeronautical Engineering education and academicians of the India.
- ✂ To provide an online interface to the users' to access, search (general to advanced) and download the value-added information on educational programmes and teachers of all the aeronautical teaching institutions in India.
- ✂ To provide a future roadmap for other academic, research institutions/LIS professionals in the country for undertaking such innovative initiatives in the age of ICT environment to contribute in national information innovation initiatives.
- ✂ To record all information on Aeronautical Engineering teaching departments/institutions and teachers in trio form of the directory, i.e., print, CD, and online.

## 3. SCOPE OF THE STUDY

The study covers all the teaching departments/institutions in the Aeronautical Engineering in India including their faculties. It contains 62 academic departments/institutions across the country responsible for imparting the education from graduate to doctoral level such as IIT's; universities affiliated engineering colleges, management institutions/colleges. The study also covers the institutions which are recognised and affiliated by the Ae.S.I. (Aeronautical Society of India). In context of the content of directory, it provide the detailed information on the various aspects of the department/institutions such as Contact Information, Name of the Head of Department and institution, numbers of faculties and facilities at a glance, courses offered, and eligibility criteria for the admission. Further, the directory also links the departments/colleges to their URL for more additional information related to departments/institutions and others.

With regard to the Aerospace Engineering faculties, 280 teachers have occupied the space that is associated/affiliated to these teaching institutions. The biographical segment of the directory is an attempt to provide brief account of information of an aero teacher ranging from its contact information to educational qualifications, area of specialisation/interests, research guidance and publications, awards and recognitions, membership of professional associations, etc.

## 4. METHODOLOGY ADOPTED

The organised resources such as directory printed or online, of the educational institutions/organisations/staff in any field of knowledge require a systematic collection of the data from the respondents which are geographically scattered of regions. The present study is based on following methodologies:

*Collection of Data:* The data was collected through the personal visits/e-mails/by post/telephonic talk/SMS and specially designed 'Data Capturing Form' from institute like IITs IISc, IIST and MIT. In some cases, information about institute and faculty was downloaded from the respective website and the personal website of faculty. However, in majority, the data was collected personally by the authors/Principal Investigator (PI) through visits.

*Method of Processing and Analysis:* The collected data was meticulously reviewed, analysed and processed for the online directory with the help of content development tools, website, and web technologies.

*Design of the Architecture of Directory:* The online directory was designed and developed using the technology of CMS and independent client server architecture technology. The reason to adopt/choose these technologies was because these provide the dynamic features to the content manager for online updations, modifications, deletions, search and download. In addition to these basic technologies, the Dreamweaver, Photoshop, Flash, HTML/XML, etc., were also used as content development tools.

## 5. THE INITIATIVE

The quality databases of educational institutions and faculties, are not only demanded by the own organisation/institution for their internal evaluation/assessment but also by the outside organisations for engaging them in various academic and research assignments. Such endeavour also gives an account to the users an idea of the available infrastructural facilities in this highly specialised and demanding field of Aerospace Engineering teaching and teachers in the country for critical assessment. In addition, it is also an

effort by the funding agency, Aeronautics Research and Development Board (AR&DB), DRDO, to have R&D collaboration with the University of Delhi to design and develop a national resource facility of Aerospace Engineering educational institutions and academicians in India for the benefits of Aerospace Engineering communities and other interested groups.

The project, started in the mid of August 2008, had priori knowledge that only a handful institutions such as IISc, IITs, MIT, PEC are imparting the education in the field of Aerospace/Aeronautical Engineering. In all nearly 62 department/institutions are actively involved in the teaching of Aerospace Engineering in the India. As the project was purely based on a survey, hence the data was collected from the identified institutions through distributing 'Data Capturing Form' (specially designed for this purpose having all fields necessary for developing online directory) by posts/e-mails/telephones or even fax. To collect the data for any study/project is always a challenging job for an investigator/researcher because of passive/indifferent participation of the respondents. The present directory is an outcome of more than 1000 mails, more than double of reminders, and nearly 20 visits by the PI and Research Associate throughout the country.

## 6. THE DIRECTORY

The directory can be easily accessed through Internet AT <http://aerodirindia.com> by anybody or from DRDO's home page (<http://www.drdo.org/ardb/dir.html>).

The information on the Aerospace Engineering educational department/institutions has been arranged by the names in an alphabetical order under the respective states they belong to. In case of the teachers/ academicians information can also be retrieved in the same way as in the case of institutions. Users can also search the directory information through institute, courses, faculty, and even through advanced searches.

### 6.1 Use and Utility

The Directory has the following functions:

- ✧ To serve as a vital statistical information on the various educational programmes of Aerospace Engineering in India such as contact information, programmes available, mode and procedure of admission, brief account of faculties, and facilities, etc.
- ✧ To act as an effective tool to assess/evaluate the performance of a teacher individually and collectively required for various purposes on the basis of their academic and research productivity.
- ✧ To make, a standard and up-to-date Aerospace Engineering teachers/experts database required not only by their own organisation but also by the other national academic and research bodies such UGC, AICTE, DST, DRDO, CSIR, ISRO, ADA, etc., to involve them (academicians) in academic and research activities.



Figure 1. Screenshot of the directory.

- ✂ To act as an online interface to researchers to find/ select their research guide according to his/her areas of interest.
- ✂ To act as an information reservoir to further develop an 'Intellectual Think Tank' of the eminent academicians/scientists for the academic and research assignments of national importance.
- ✂ To serve as a ready-reckoner for finding filtered information on aerospace engineering teaching institutions and teachers in India.

## 6.2 Contents of the Directory

The directory provides vital information at one stop on the teaching programmes and teachers of aerospace engineering in the India for all the users who are interested to access, search, and download tailor made/ filtered information.

It also literates the information seeker on the various information segments such as courses and duration of the programmes, contact information of a particular institute, mode/criteria and eligibility of admission, facilities, and faculty, etc. The link of the website, viz., Teachers, is an interesting hot spot to know the academic, research and professional commitments/ assignments of an Aerospace Engineering teacher. The

link comprises address and contact information, areas of specialisation/interests, research guidance, publications, participations in professional events, works experiences and associations with learned bodies, project handled, etc.

The website also links the rich/content-based useful links of the Aerospace Engineering resources available on the public domain that can be very useful and valuable to the Aerospace Teaching communities. The directory portal also has feedback option for further research and refinement.

## 4. CONCLUSION

To work on any project, based on survey research and when the targeted populations/respondents are situated on multi-locations, is always a challenging job for a researchers/PI. The situation becomes more challenging when a researcher or PI has more responsibility in their parental organisation and the funding agency has more expectations from a researcher. During the course of this project we have some very healthy and excited experiences, while visiting/interacting with few faculties of aerospace engineering departments/colleges of Mumbai, Nagpur, Chennai, Bangalore, Coimbatore, Noida, and Chandigarh, who not only welcome such innovative initiatives but also made their useful contributions,

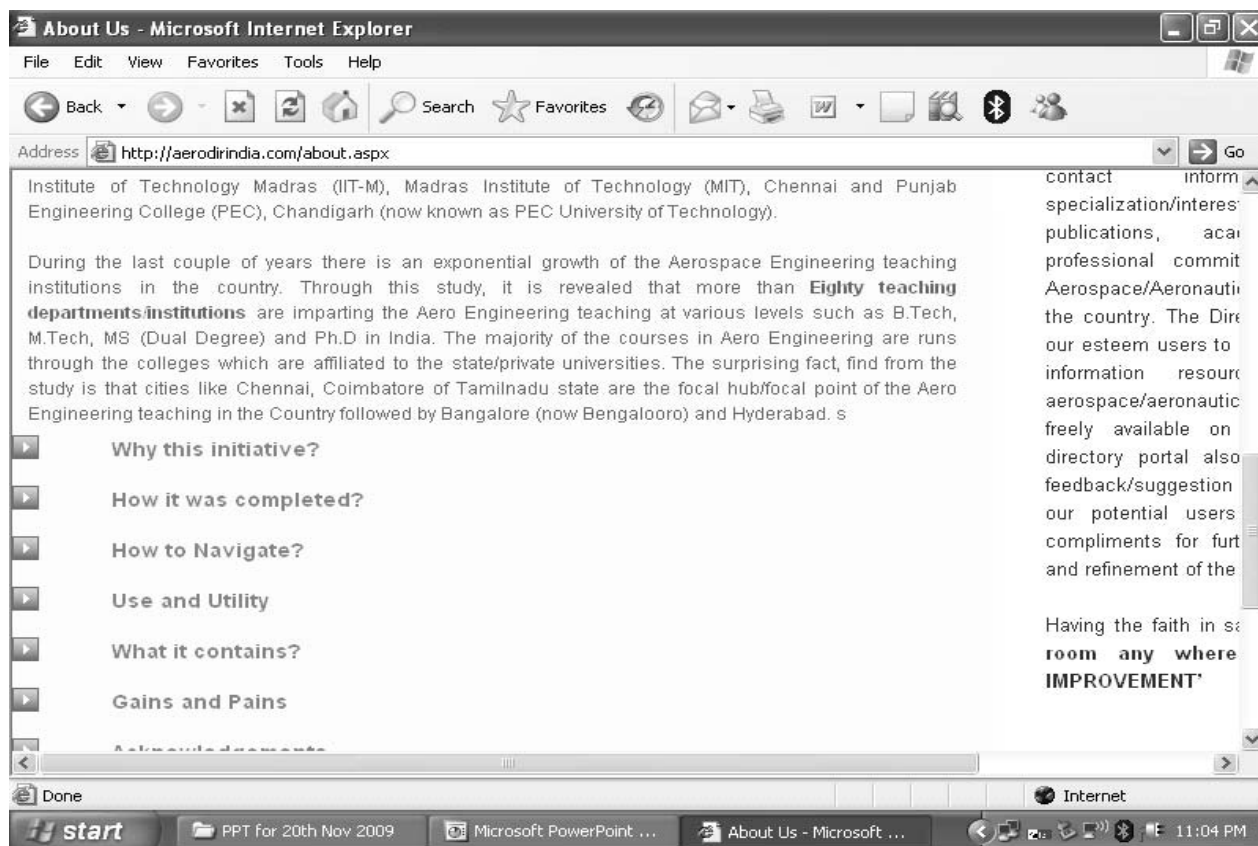


Figure 2. Screenshot of the content page of the directory.

suggestions, and compliments that the directory will be helpful as a single source, information provider to the professionals and students engaged in aeronautical studies.

## ACKNOWLEDGEMENTS

Firstly, our greatest thanks are due to the funding agency Aeronautic Research and Development Board (AR&DB), DRDO, MoD, Govt. of India, New Delhi, for providing the fund for this major research project. Our immense thanks to Dr AL Moorthy, the Coordinator, Aerospace Resource Panel, AR&DB, and Director, Defence Scientific and Information Documentation Centre (DESIDOC), DRDO, New Delhi, for his personal interest in this project and providing us all rounds of professional and personal inputs. Dr Moorthy's contribution has been invaluable to us and without his active cooperation this project could not have completed.

Secondly, any research project, which is based on survey research, can not be completed without the positive responses of the respondents. We express our sincere thanks to all the department/institutions and faculties who enthusiastically participated in this project. For us they are truly the real heroes of this venture/project and it is also true that the future of this project will depend on them for making this directory/output more vibrant, informative, effective, and up-to-date as a national aerospace info tool.

We will be failing in our duty if we do not record our deep gratitude to Prof. Deepak Pental, Vice Chancellor, University of Delhi, for his motivation and encouragement. Last but not the least, we record our special thanks to Dr R.K. Bhatt, Head, Department of Library and Information Science, University of Delhi, and all colleagues/staff for providing us every possible support and assistance during the course of this project.

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